

AMENDMENTS TO THE CLAIMS

Please **AMEND** claims 23 and 25-28 as shown below.

The following is a complete list of all claims in this application.

Claims 1-7 (Cancelled)

8. (Previously Presented) A method for the production of a coal-based cellular product comprising a matrix of cells having cells of a different density comprising:

selecting a first coal-based precursor ground to a particle size below about 1mm for providing a matrix of an appropriate strength and density;

selecting a second coal-based precursor ground to a particle size below about 1mm, having a different particle size than that of said matrix, said second coal-based precursor when expanded providing at least one of an integral stiffener, a load path, a heat transfer path, and a mass transfer path;

loading each of said first and second coal-based precursors into first and second volumes of a mold, wherein first and second coal-based precursors are separated by partitions within the mold;

heating said mold under a non-oxidizing atmosphere to a temperature ranging from about 300°C to about 700°C and soaking at this temperature for a period of from about 10 minutes to about 12 hours; and

controllably cooling said coal-based product.

9. (Previously Presented) The method for the production of a coal-based cellular product comprising a matrix of cells having cells of a different density of claim 8, wherein said partitions are removed prior to said heating.

10. (Previously Presented) The method for the production of a coal-based cellular product comprising a matrix of cells having cells of a different density of claim 8, wherein said partitions remain in place during said heating and are integrated into the coal-based product.

11. (Previously Presented) The method for the production of a coal-based cellular product comprising a matrix of cells having cells of a different density of claim 8, wherein said mold comprises glass or ceramic.

Claims 12-13 (Cancelled)

14. (Previously Presented) A coal-based cellular product, comprising:

a matrix of cells having a density; and
at least one of an integral stiffener, load path, direct heat transfer path, and a mass transfer path coal-based cells arranged in said matrix of cells defined by the presence of coal-based cells having a different density and cell size than said cells of the matrix.

15. (Previously Presented) The coal-based cellular product of claim 14, wherein said coal-based cellular product is formed from bituminous coal.

16. (Previously Presented) The coal-based cellular product of claim 15, wherein said bituminous coal has a swell index of from about 3 to about 5.

17. (Previously Presented) The coal-based cellular product of claim 16, wherein said bituminous coal has a Gieseler plasticity value above about 500 DDPM.

18. (Previously Presented) The coal-based cellular product of claim 14, wherein said coal-based cells have a greater wall thickness than said matrix cells.

19. (Previously Presented) The coal-based cellular product of claim 14, wherein said coal-based cells have a greater heat conduction than said matrix cells.

20. (Previously Presented) The coal-based cellular product of claim 14, wherein said coal-based cellular product is a heat exchanger material.

21. (Previously Presented) The coal-based cellular product of claim 14, wherein said coal-based cells have different mass transfer characteristics than said matrix cells.

22. (Previously Presented) A method for forming a coal-based cellular product having a matrix of cells of different densities, comprising:

arranging a coal-based precursor having particle sizes below about 1mm into a thermally conductive mold;

arranging said mold into a pressure chamber under a non-oxidizing atmosphere;

heating said thermally conductive mold to a temperature ranging from about 300°C to about 700°C and holding at this temperature for about 10 minutes to about 12 hours; and

controllably cooling said coal-based product for forming a coal-based product having a matrix of cells of different densities.

23. (Currently Amended) The method for forming a coal-based cellular product having a matrix of cells of different densities of claim 22, wherein said mold is ~~thermally conductive and~~ includes at least one of aluminum and steel.

24. (Previously Presented) The method for forming a coal-based cellular product having a matrix of cells of different densities of claim 22, wherein said matrix of cells have a linearly graded structure.

25. (Currently Amended) The method for forming a coal-based cellular product having a matrix of cells of different densities of claim 22, wherein said coal-based precursor includes a high volatile bituminous coal and a load low volatile bituminous coal for forming a matrix of cells have having a graded cellular structure.

26. (Currently Amended) The method for forming a coal-based cellular product having a matrix of cells of different densities of claim 25, further comprises comprising:

separating said high volatile bituminous coal from said low volatile bituminous coal within the mold with a removable partition.

27. (Currently Amended) The method for forming a coal-based cellular product having a matrix of cells of different densities of claim 25, further ~~comprises~~ comprising:

vibrating the mold to achieve a predetermined packing density of the high volatile bituminous coal and low volatile bituminous coal.

28. (Currently Amended) The method for forming a coal-based cellular product having a matrix of cells of different densities of claim 22, wherein said non-oxidizing atmosphere comprises nitrogen at a pressure ranging from [[of]] about 25 to about 500 psi.